

MAINE AQUACULTURE

**SUSTAINABLE SOLUTIONS FOR
MAINE'S GROWING FUTURE**

MAA ENVIRONMENTAL POLICY

“It is the policy of the MAA and its members to act as responsible stewards of the environment. As aquatic farmers, we have a strong vested interest in healthy aquatic ecosystems, high water quality and a clean environment. While recognizing that all human activities have environmental impacts, association members are committed to minimizing possible adverse impacts from their activities. We seek to promote responsible development and management of the Maine Aquaculture Sector in order to assure the production of high quality food while respecting environmental considerations and consumer demands. It is the policy of MAA and it’s members to continually seek to achieve long-term economic viability and competitiveness while maintaining our commitment to environmental sustainability and stewardship. Members of the association will implement this policy by their development and adherence to COPs based on the Guiding Principles for Responsible Aquaculture in Maine”. (MAA 2002)

MAINE AQUACULTURE 2001

- | <u>LEASE TYPE</u> | <u>#</u> | <u>AVG. % OF LEASE OCCUPIED</u> |
|-------------------|----------|---------------------------------|
| – FINFISH | 44 | 25-75% |
| – SHELLFISH | 40 | 20-90% |
| – EXPERIMENTAL | 41 | 10-85% (ALL SHELLFISH) |
| – SEAWEED | 1 | 25-65% |

- | <u>TOTAL FARM GATE SALES</u> | | | |
|------------------------------|---------------------|-----------|---------------|
| – FINFISH | \$64 million | FINFISH | \$85,906/ACRE |
| – SHELLFISH | \$8 million | SHELLFISH | \$16,632/ACRE |
| – FRESHWATER | <u>\$1.5million</u> | | |
| – TOTAL | \$73.5 million | | |

MAINE AQUACULTURE 2001

LEASED AREA (acres)

• 44 FINFISH LEASE SITES	750
• 40 SHELLFISH LEASE SITES	428
• 41 EXPERIMENTAL LEASE SITES	53
• <u>1 SEAWEED LEASE SITE</u>	<u>7</u>
TOTAL	1238 ACRES<.03% ME. WATERS
(LOBSTER GEAR)	17-28,000 ACRES5-8% ME.. WATERS
• Cobscook Bay	1.7% FINFISH 0.09% SHELLFISH
• Damriscotta River	1.2% SHELLFISH
• Blue Hill Bay	0.1% FINFISH
• Frenchmans Bay	0.15% SHELLFISH

CURRENT REGULATORY AUTHORITIES FOR MAINE AQUACULTURE INDUSTRY

NATIONAL AUTHORITIES

- **National Marine Fisheries Service**
- **U.S. Fish and Wildlife Service**
- **Army Corps of Engineers**
- **Environmental Protection Agency**
- **Department of Agriculture**
- **U.S. Department of Commerce**
- **U.S. Coast Guard**
- **U.S. Department of Labor**
- **FDA**
- **ISSC**

REGIONAL AUTHORITIES

- **New England Fisheries Management Council**
- **Atlantic States Marine Fisheries Commission**

STATE AUTHORITIES

- **Department of Environmental Protection**
- **Department of Marine Resources**
- **Inland Fish and Wildlife**
- **Department of Agriculture**
- **Department of Health and Human Services**

FEDERAL REGULATORY OVERSIGHT

- **Clean Water Act**
- **National Environmental Policy Act**
- **Coastal Zone Management Act**
- **Rivers and Harbors Act**
- **Endangered Species Act**
- **Lacey Act**
- **Migratory Bird Treaty Act**
- **Marine Mammal Protection Act**
- **Magnuson-Stevens Fisheries & Conservation Act**
- **Sustainable Fisheries Act**
- **Food Drug & Cosmetic Act**
- **Nonindigenous Aquatic Nuisance Prevention & Control Act**
- **Federal Insecticide, Fungicide and Rodenticide Act**
- **Virus-Serum-Toxin Act**
- **Federal Sanitation Standards (HACCP) Regulations**
- **National Marine Sanctuary Act.**

MAINE STATE AQUACULTURE MANAGEMENT PROGRAM

- **AQUACULTURE LEASING PROGRAM**
- **2 ENVIRONMENTAL MONITORING PROGRAMS (DEP, DMR)**
- **AQUACULTURE PRODUCTION MONITORING (FAMP)**
- **FISH HEALTH SURVEILLANCE AND CERTIFICATION PROGRAM**
- **BIOSECURITY AUDITING PROGRAM**
- **WATER CERTIFICATION PROGRAM**
- **AGRICULTURAL NUTRIENT MANAGEMENT PROGRAM**
- **MARINE BIOTOXINS MONITORING PROGRAM**
- **2 PUBLIC HEALTH / SEAFOOD SAFETY INSPECTION PROGRAMS**

MAA COOPERATIVE MANAGEMENT PROGRAMS

- **PATHOGEN SPECIFIC ACTION PLANS**
- **INTERGRATED PEST MANAGEMENT PLAN**
- **CONTIANMENT MANAGEMENT SYSTEM**
- **FINFISH BAY MANAGEMENT AGREEMENT**
- **COMPREHENSIVE CODE OF PRACTICE**
- **SHELLFISH HEALTH AND BIOSECURITY MANAGEMENT PLAN**



ENVIRONMENTAL POLICY

GUIDING PRINCIPLES

CODE OF PRACTICE

**ENVIRONMENTAL
MANAGEMENT SYSTEM**

COMPREHENSIVE MANAGEMENT SYSTEM
INVOLVING PLANNING, IMPLEMENTATION
AND ONGOING REVIEW AND CORRECTIVE ACTIONS

**BEST MANAGEMENT
PRACTICES**

SPECIFIC SET OF OPERATIONAL STANDARDS

MAA Guiding Principles for Responsible Aquaculture in Maine

- **SET OF 14 OVERARCHING PRINCIPLES BASED ON THE FAO CODE OF RESPONSIBLE FISHERIES. HARMONIZED WITH FEAP GUIDING PRINCIPLES.**
- **FOCUSED ON THE RESPONSIBILITY OF THE AQUACULTURIST TO THE ENVIRONMENT, THE FISH, SHELLFISH AND SEA VEGETABLES GROWN, CONSUMERS AND THE COMMUNITIES IN WHICH WE OPERATE.**
- **OVERTLY STATE THAT MAA MEMBER GOALS ARE TO ACHIEVE ENVIRONMENTAL, ECONOMIC AND SOCIAL SUSTAINABILITY.**
- **RECOGNIZE THE NEED FOR BOTH INDIVIDUAL AND COLLECTIVE ACTION.**
- **SPECIFICALLY ADDRESS THE IMPORTANCE OF REGULATORY COMPLIANCE, WATER RESOURCES, ANIMAL WELFARE, WASTES MANAGEMENT AND DISEASE CONTROL, THERAPEUTIC USE , INTRODUCTIONS AND TRANSFERS, LOCAL COMMUNITIES, ECONOMIC DIVERSIFICATION**
- **STRESS THE NEED FOR CONTINUAL TECHNICAL AND MANAGERIAL INNOVATION**

CODES OF PRACTICE

COMMON CORE COMPONENTS

- **BASED ON RISK MANAGEMENT APPROACH**
- **TRANSPARENT**
- **CLEAR POLICY STATEMENT**
- **GUIDING PRINCIPLES**
- **ESTABLISH CLEAR EXPECTATIONS & MEASURABLE GOALS**
- **ESTABLISH CLEAR LINES OF RESPONSIBILITY AND ACCOUNTABILITY**
- **ESTABLISH OPERATIONAL GUIDELINES AND MINIMUM STANDARDS**
- **ESTABLISH METHODS OF DOCUMENTATION AND VERIFICATION**
- **ENCOURAGES CONTINUAL IMPROVEMENT**

Environmental Management System

Elements of a
Successful
Environmental
Management
System



MAA PATHOGEN SPECIFIC ACTION PLANS

- **CLARIFICATION OF DEFINITION OF CONFIRMED POSITIVE STATUS AT TEST, FISH, CAGE AND FARM LEVELS**
- **OUTLINE POTENTIAL ECONOMIC IMPACTS OF CLINICAL OUTBREAKS**
- **PRIORITIZED PATHOGEN AND DISEASE MANAGEMENT OBJECTIVES**
- **SPECIFIC BIOSECURITY AND SURVEILLANCE PROTOCOLS**
- **SPECIFIC GUIDANCE ON REPORTING OBLIGATIONS**

MAA INTERGRATED PEST MANAGEMENT PLANS

- **PROACTIVE MANAGEMENT**
- **INTERVENTION IS STRATEGICALLY LINKED TO PEST LIFE CYCLE**
- **AGGRESSIVE MONITORING OF PEST LIFE STAGE AND POPULATION LOADS**
- **GOAL TO MINIMIZE THERAPUTANT USE WHILE PROTECTING ANIMAL HEALTH AND WELFARE**
- **EXTERNAL OVERSIGHT AND MANAGEMENT**
- **COORDINATION OF EFFORTS IN LOCAL BAY MANAGEMENT AREAS**

MAA CONTAINMENT MANAGEMENT SYSTEM

- **BASED ON NGO AGREEMENT AND INDUSTRY CODE OF CONTAINMENT**
- **DEVELOPED UNDER GUIDANCE OF 13 MEMBER STEERING COMMITTEE**
- **FULL INDUSTRY PARTICIPATION**
- **BASED ON HACCP AND RISK ANALYSIS APPROACH**
- **DETAILED SET OF MINIMUM STANDARDS AND PROTOCOLS**
- **COVERS BOTH FRESHWATER AND SALTWATER FACILITIES**
- **MEASURABLE GOALS WITH EXTENSIVE DOCUMENTATION**
- **MANDATORY REPORTING OF ESCAPES**
- **TRANSPARENT**
- **COMPLIANCE INDEPENDANTLY AUDITED AND VERIFIED**
- **SIGNIFICANT PENALTIES AND INCENTIVES**

MAA BAY MANAGEMENT

- **FINFISH BAY MANAGEMENT AGREEMENT (FBMA)**
- **LOCAL BAY MANAGEMENT PLANS (LBMP)**
- **SHELLFISH HEALTH AND BIOSECURITY PLAN**

MAA BAY MANAGEMENT

MAA BAY MANAGEMENT AGREEMENT

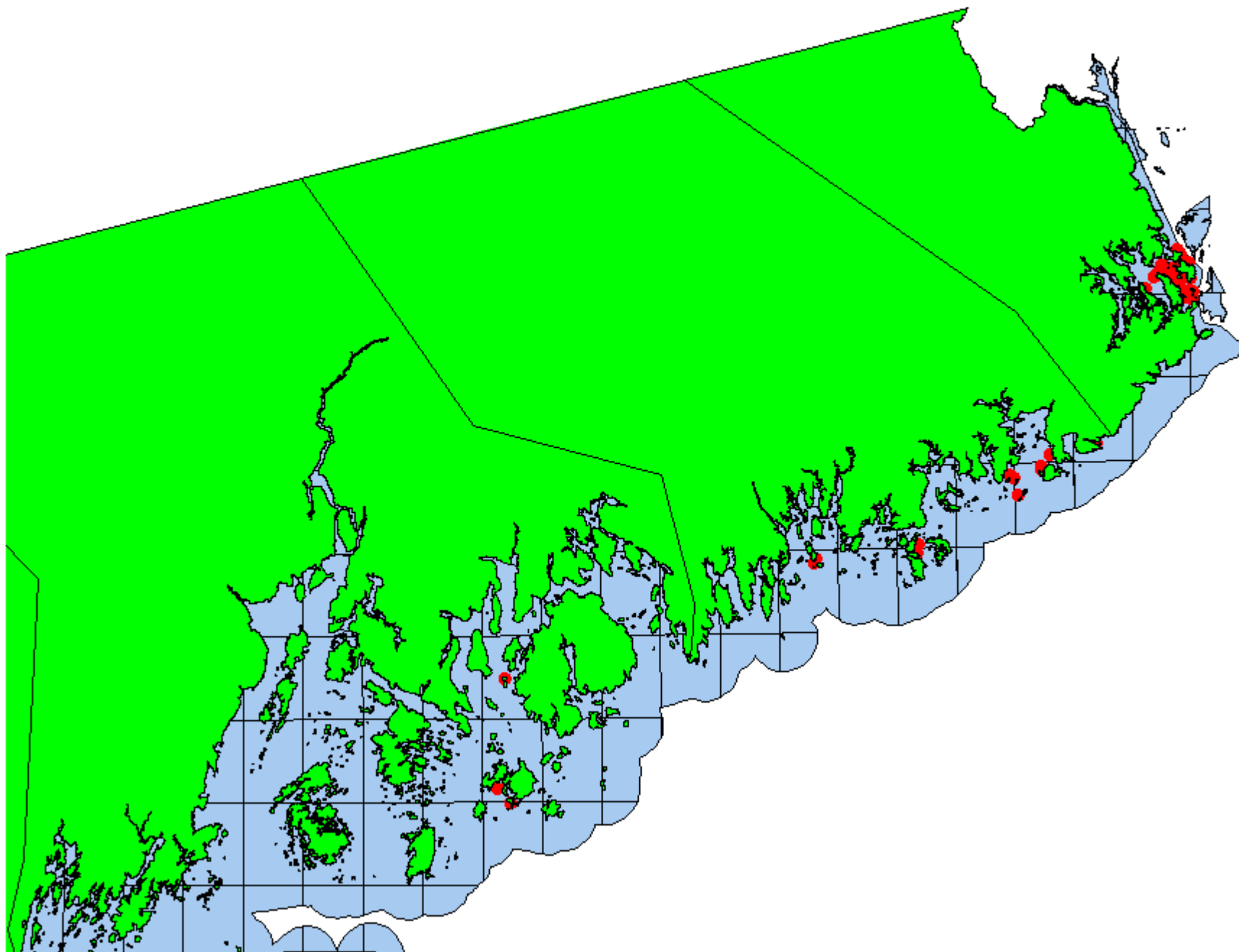
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graph TD; A[MAA BAY MANAGEMENT AGREEMENT] --> B[BAY MANAGEMENT AREA 2 PLAN]; A --> C[BAY MANAGEMENT AREA 1 PLAN]; A --> D[BAY MANAGEMENT AREA 3 PLAN];
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BAY MANAGEMENT AREA 2 PLAN

BAY MANAGEMENT AREA 1 PLAN

BAY MANAGEMENT AREA 3 PLAN

SALMONID LEASE SITES



MAA FINFISH BAY MANAGEMENT AGREEMENT

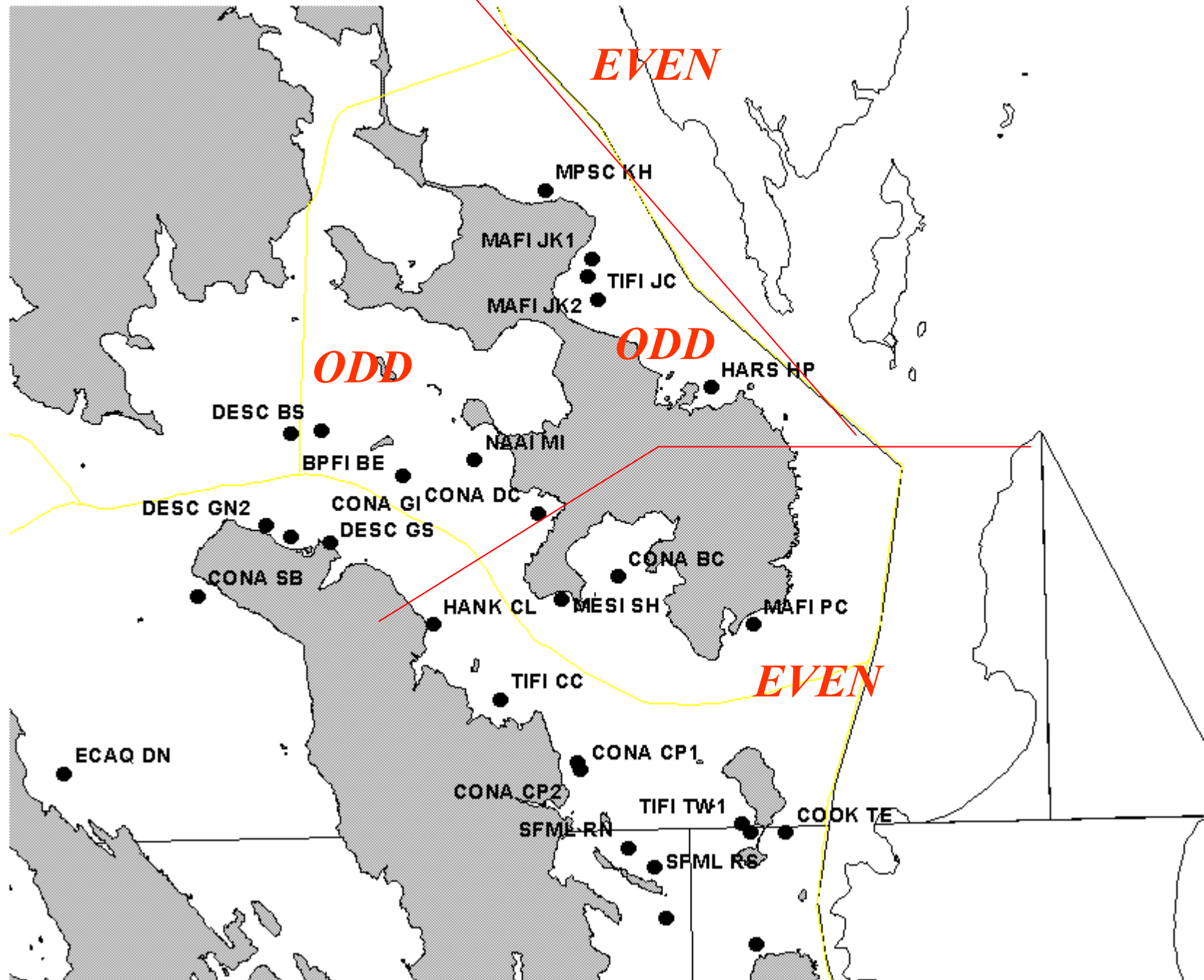
- **OVERARCHING LEGAL DOCUMENT**
 - **ACKNOWLEDGES COLLECTIVE RISK**
 - **CREATES FRAMEWORK FOR CO-OBLIGATION**
- **STATEWIDE MISSION STATEMENT**
- **COMMON SET OF TECHNICAL DEFINITIONS**
- **ESTABLISH MINIMUM SUBJECT AREAS TO BE ADDRESSED IN LOCAL BAY MANAGEMENT PLANS**
- **ESTABLISH MINIMUM OPERATIONAL STANDARDS AND GUIDELINES FOR ALL LOCAL BAY MANAGEMENT PLANS**
- **ESTABLISHES MECHANISMS FOR REVIEW AND UPDATE OF AGREEMENT AND LOCAL BAY MANAGEMENT PLANS**

FINFISH BAY MANAGEMENT AGREEMENT

MINIMUM OPERATIONAL STANDARDS AND GUIDELINES

- **TRANSITION MECHANISM GUIDELINES**
- **COMMUNICATIONS GUIDELINES**
- **FISH HEALTH MANAGEMENT AND BIOSECURITY PROTOCOLS**
- **INTERGRATED PEST MANAGEMENT GUIDELINES**
- **WASTE MANAGEMENT GUIDELINES**
- **DISINFECTION PROTOCOLS**

Net Pen Sites by ID Code



MAA BAY MANAGEMENT AREA PLANS

LOCAL, LEGALLY BINDING DOCUMENT DESIGNED TO COMPLY WITH MINIMUM STANDARDS OF FBMA

- **ANTI-TRUST STATEMENT**
- **BAY MANAGEMENT AREA (BMA) MISSION STATEMENT**
- **BMA BOUNDRIES AND LISTS FARM OCCUPANTS**
- **LONG TERM BMA “TARGET”**
- **CONSTRAINTS TO ATTAINING TARGET**
- **ACTIONS REQUIRED TO OVERCOME CONSTRAINTS**
- **ALLOWABLE TRANSITION MECHANISMS AND TIME PERIOD**
- **BMA COMMUNICATIONS PLAN**
- **BMA WASTE MANAGEMENT PLAN**
- **BMA INTERGRATED PEST MANAGEMENT PLAN**
- **BMA FISH HEALTH MANAGEMENT AND BIOSECURITY PLAN**
- **BMA DISINFECTION PROTOCOLS**

BAY MANAGEMENT COSTS

- **INCREASED CAPITAL INVESTMENT**
 - EQUIPMENT MOVEMENT LIMITATIONS
 - ELEVATED WASTEWATER DISCHARGE TREATMENTS
 - TECHNICALLY MORE SOPHISTICATED VESSELS
 - DEDICATED LOCAL VESSELS
 - LOCALIZED PROCESSING PLANTS
- **DECREASED EFFICIENCY OF REARING VOLUME UTILIZATION**
 - DECREASED PRODUCTION
 - DECREASED REVENUES
- **DECREASED ROI**
- **INCREASED OPERATIONAL EXPENSE**
 - REDUCED LABOR EFFICIENCY
 - INCREASED VESSELS EXPENSES
 - REDUCED PROCESSING EFFICIENCIES
 - CLEANING AND DISINFECTION

MAINE AQUACULTURE HISTORY

- MID 1800'S GOVERNMENT HATCHERIES TO RESTORE SALMON AND COD
- EARLY 1900'S EMERGENCE OF LARGE SCALE LOBSTER POUNDS
- THROUGHOUT LATE 1800'S AND 1900'S MILLIONS OF COD AND SALMON FRY RELEASED
- EARLY 1970'S ATTEMPTS TO FARM TROUT, MUSSELS AND OYSTERS
- 1973 MAINE LEASING STATUTE PASSED
- 1975 FIRST LEASE GRANTED TO DR. ED MEYERS
- 1980,90,91,97,98,2000, 02 SIGNIFICANT AQUACULTURE STUDIES/ MANAGEMENT PLANS
- 1987,89,91,94,2001,02 SIGNIFICANT STATE REGULATORY CHANGES
- 1996 – 2001 MAINE #1 MARINE AQUACULTURE PRODUCING STATE (\$)
- 2002 MAINE LOOSES # 1 POSITION

MAINE AQUACULTURE

**SUSTAINABLE SOLUTIONS FOR
MAINE'S GROWING FUTURE**

BIOSECURITY AUDITS

- **PROACTIVE TOOL ALLOWS “OUTSIDER” TO REVIEW AND GIVE DIRECT FEEDBACK ON FARM PRACTICES**
- **BASED ON RISK ANALYSIS AND DIRECT OBSERVATION**
- **INDEPENDENT THIRD PARTY AUDITORS**
- **UNANNOUNCED AND REPETITIVE**
- **SYSTEMATIC REVIEW OF POTENTIAL VECTORS AND RISK FACTORS**
- **BETWEEN 77-121 QUALITATIVE AND QUANTITATIVE MEASURES**
- **WEIGHTED FACTOR ANALYSIS**
- **SPECIFIC REMEDIAL RECOMMENDATIONS**